

amended. Claims 1-7, 9, and 11-15 remain pending in this application. Reconsideration of this application in view of the above amendments and the following remarks is respectfully requested.

### **Claims 1 and 7**

Prior to filing this continuing prosecution application, in an Office Action dated August 6, 1999, the Examiner rejected independent claim 1 under 35 U.S.C. 103 (a) as being unpatentable over Shibata in view of Park. More particularly, in the Office Action, the Examiner stated:

Regrading claim 1, Shibata discloses the following: a unitary housing as shown in fig. 2 comprising: AV capture capabilities (210,200) for capturing video images and spoken audio of participant of a video conference, a monitor in 200 for displaying visual images associated with at least one participant, audio reproduction capabilities represented by 210 (Fig. 2, col. 3 lines 66-68, col. 4 lines 1-20).

Shibata differs from the claimed invention by not showing an adaptive echo canceler configured to reduce echoes during the reproduction of audio.

However, Park discloses apparatus and method for noise reduction for a full duplex speaker phone of the like which teaches the use of adaptive echo canceler configured to reduce echoes during the reproduction of audio (Figs. 1-3, see abstract, col. 13 lines 3-68, col. 4 lines 1-68, col. 5 lines 1-68, col. 6 lines 1-22, col. 7 lines 54-68, col. 8 lines 1-15).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Shibata's system to provide for an adaptive echo canceler configured to reduce echoes during the reproduction of audio as this would facilitate effective control of echo in a conference room where echos are caused by acoustic echo and electrical echo, thus providing good quality audio for conferees as taught by Park.

The Examiner also rejected independent claim 7 under 35 U.S.C. 103(a) as being unpatentable over Shibata in view of Flohr and Conway. More particularly, in the Office Action, the Examiner stated:



Regarding claims 7, 16, Shibata shows the following: a plurality of workstations as shown in fig. 1, each including: a unitary housing, in a fixed spatial relationship to each other, a monitor represented by 200 for displaying participant video images, AV capture capabilities represented by (210,200) for capturing video images and spoken audio of participants, and audio reproduction capabilities, and an AV path (circuits-1, circuit-2), for carrying AV signals representing video images and spoken audio of the participants, among the work stations, for reproduction on at least one monitor associated with the workstation of one of the participants.

Shibata differs from the claimed invention by not teaching the following: a data path along with data can be shared among a plurality of the participants to be displayed interactively on the monitor, and use of two monitors to display data interactively.

However, Flohr teaches the use of LAN cable 100 that provides data path along which data can be shared among a plurality of participants and displayed on the monitor (Fig. 8, col. 13 lines 19-37).

Conway teaches the use of two monitor for displaying data interactively (fig. 1, col. 5 lines 18-68, col. 6 lines 1-68, col. 7 lines 1-15).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Shibata's system to provide for the following: a data path along with data can be shared among a plurality of the participants to be displayed interactively on the monitor as this would provide an economical way of transmitting data using low bandwidth network, and use of two monitors to display data interactively as this would enable greater teleinteraction among the participants as taught by Conway.

Applicants respectfully disagree with this reasoning. Both independent claims 1 and 7 recite a *unitary housing* that includes audio capture capabilities (such as a camera and microphone), a monitor, audio reproduction capabilities (such as speakers) and an adaptive acoustic echo canceler. More particularly, claims 1 and 7 have been amended to recite that the audio capture and reproduction devices are integrated into the unitary housing in a fixed spatial relationship with respect to each other and cooperate with the adaptive acoustic echo canceler.

Furthermore, the claimed unitary housing (a feature not shown in Shibata) has a *non-obvious* advantage for the claimed echo cancellation technique. Adaptive acoustic echo cancellation requires sophisticated modeling of an environment that includes modelling of the

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objects from which sound is reflected, including their size, location, and acoustic properties. To achieve this modeling, adaptive acoustic echo cancellation also takes into account *the relative positioning* of speakers and microphones with respect to one another. Thus, both independent claims 1 and 7 recite that the *audio capture and reproduction devices are integrated into the unitary housing in a fixed spatial relationship with respect to each other and cooperate with the acoustic echo canceler to reduce echo during the reproduction of the audio*. The unitary housing has the distinct advantage that the relative position of the speakers and microphone(s) are known – because they are built into fixed positions in the housing – at the time of manufacture. This allows the claimed echo canceler to be, at least in part, “pretrained,” making the echo canceling quicker, more efficient, more reliable, and less computation intensive. Moreover, if the speakers and microphones were relatively moveable (and were, indeed, moved) during a video conference the result would be an immediate retraining of the adaptive acoustic echo canceler. As training is often accomplished by use of “white noise,” the relevant disturbance would be unacceptable in a video conferencing environment. Accordingly, the claim unitary housing has significant advantages.

In contrast, the language in Shibata describing its multipoint teleconference system does not describe or imply the existence of or the need for a unitary housing with the speaker(s) and microphone(s) in fixed position with respect to one another. The description of figure 2 (Col. 3-4) merely describes the functionality of the components of the system, but does not even imply that housing the components in a single structure allows either individual components or the entire system to function more effectively.

Shibata can therefore not support this obvious new rejection. At the very least, it does not show a unitary housing with speakers and microphones in a fixed relationship with respect to each other. Shibata cannot meet the MPEP mandated requirement that a reference must show or suggest all claim limitations. (MPEP § 2143)

## **CLAIMS 2-6 AND 9-15**

In the previous office action, the Examiner rejected claims 2-4 under 35 U.S.C. 103(a) as being unpatentable over Shibata in view of Park; claims 5 and 6 as being unpatentable over Shibata in view of Park and Feiner; claims 9 and 11 as being unpatentable over Shibata in view


of Flohr and Conway; claims 10 and 13 as being unpatentable over Shibata in view of Flohr, Conway, and Park; claim 12 over Shibata in view of Flohr, Conway, and Park; and claims 14 and 15 as being unpatentable over Shibata in view of Flohr, Conway, and Feiner.

Claim 2-6 and 9-15 depend from independent claims 1 and 7, respectfully. As stated above, independent claims 1 and 7 are patentable over the prior art of record. Therefore, Applicants submit that dependent claims 2-6 and 9-15 are patentable over the prior art of record for at least the same reasons stated above for independent claims 1 and 7.

## CONCLUSION

Applicants respectfully submit that the pending claims 1-7, 9, and 11-15 are patentable over the art of record. Accordingly, a Notice of Allowance respecting all pending claims is earnestly solicited. Should the Examiner wish to discuss any of the above in greater detail, the Examiner is invited to telephone the undersigned at the telephone number listed below.

Respectfully submitted,



Craig P. Opperman

Registration No. 37,078

COOLEY GODWARD LLP  
(650) 843-5000 (main)  
(650) 843-5115 (direct)

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